Space Weather Forecast

Issued on Friday, 05 November 2021 at 00:25 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of Moderate class flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: There are numbered two sunspot regions on the visible disc with observed solar activity remaining at Low levels with occasional Common class flares over the past 24 hours. AR2891 remains magnetically complex, despite its small size. AR2893 in the northeast quadrant appears stable with very little recent activity. There is a new region currently rotating onto the southeast limb, which appears to have produced the strongest Common class flare during the past 24 hours.

No Earth-directed CME's are currently expected.

Solar Wind / Geomagnetic Activity: The CME which was observed leaving the Sun early on the 2nd November arrived at Earth around 03/2000 UTC, and over the past 24 hours the solar wind parameters have indicated the initial effects and then the waning influence from this CME. The solar wind started the period at strong levels, around 780 km/s, and peaked at 817 km/s at 04/1040 UTC, then gradually declined to end the day at elevated levels near 580 km/s.
The total strength of the solar wind's magnetic field was predominantly strong through the morning, before settling to generally moderate levels through the afternoon and evening. The important north-south component was generally moderate to strongly negative through the morning, but became neutral and then positive from midday onwards. G2/Moderate to G3/Strong geomagnetic activity was recorded 04/0000-0900 UTC, followed by a G4/Severe storm interval 0900-1200 UTC. After 04/1200 UTC the geomagnetic activity quickly decreased, ending the day at Quiet levels.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained slightly elevated.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to remain mainly low through the next four days, but with a continuing chance of Moderate class flares.

Solar Wind / Geomagnetic Activity: Solar wind speeds are currently at elevated levels (around 580km/s). As the effects from the CME wane over the coming days a gradual reduction in speeds is anticipated, reaching slightly elevated or background levels. Geomagnetic activity is expected to be predominantly Quiet to Active (Kp 2-4) today and tomorrow (5th and 6th), with a chance of G1/minor to G2/moderate storms. From day 3 (7th) Quiet to Unsettled conditions are expected.

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Met Office Space Weather Forecast

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to remain below storm levels.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	20	10	5	1
Strong	G3	Yes	5	1	1	1
Severe	G4	Yes	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	20	20	20	20
Very Active	R3 to R5 X	No	2	2	2	2

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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